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Research Article

A Study On The Digital Divide: E-Governance And M-Governance In A Hub And Spoke Model

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ABSTRACT

E-governance is widely recognized as a crucial factor in improving government. While e-governance has the potential to achieve its objectives, the issue of last-mile connectivity remains a recurring challenge in developing nations owing to the lack of necessary infrastructure to support e-governance at a sufficient level. Developing countries have a higher telephone/mobile use level of telephone/mobile use than internet usage. Therefore, using telephones/mobile phones as a tool to complement e-governance in its final stage is somewhat essential. The widespread use of mobile connections at higher levels renders the issue of last-mile connectivity rather obsolete. Mobile governance, or m-governance, may complement e-governance in a spoke and hub framework. It will be beneficial in reducing the disparity in access to digital technology, especially in rural areas and emerging regions, notably in Asia and Africa. This article examines the implementation of e-governance and m-governance using a spoke and hub paradigm. Implementing a standardized procedure would facilitate the rapid repetition of services and broader adoption.

Keywords: Developing countries, Digital divide, e-governance, m-governance, Internet usage

1. Introduction

The advent of the Internet has had a beneficial influence on several aspects of life, including business, personal matters, and even government operations. ICT has been pivotal in the late 20th century and will continue to be influential in the 21st century.[1] However, the diffusion of technology at the lower level has not been as profound as the advancements in technology itself. The presence of heated disputes over the digital divide serves as evidence of its existence. Internet availability varies significantly throughout various regions of the globe. As seen by charts 1 and 2, the digital gap is substantial. Among nations with low internet penetration, the last 10 countries have a penetration rate of less than 0.25%. In contrast, those on the better side of the digital divide have a penetration rate above 60%. Even in nations with low levels of internet penetration, particularly those classified as Least Developed nations (LDCs), internet access is mainly concentrated in more developed urban areas.

Unsurprisingly, the nation's ranking at the bottom are exclusively from Asia and Africa. There are several obstacles that impede the broader accessibility of the internet. Significant factors include low income, limited education, social status, and nationality. This has resulted in another issue. According to a study by ITU (2002),[2] a significant positive link has been shown between a nation's prosperity, as measured by its Gross Domestic Product (GDP), and the amount of internet penetration. Due to their low penetration level, least developed countries are unable to effectively utilize their existing resources, resulting in inefficient use and a low level of wealth. Consequently, they are unable to allocate funds towards more advanced services such as the internet, as their existing resources are already allocated towards social welfare, debt and interest payments, and in some cases, the purchase of weapons. According to the same research, it has been shown that the disparity in internet access between emerging nations and least developed countries is growing.

The top ten countries in terms of overall internet users are as follows:

Table-1: Top ten countries in terms of overall internet users (as of January 2023)

"Rank	Nation	Region	Internet Users	Population	Internet Penetration Rate
1	China	Asia	1.05 billion	1.412 billion	74.36%
2	India	Asia	692 million	1.408 billion	49.15%
3	US	North America	311.3 million	331.9 million	93.79%
4	Indonesia	Asia	212.9 million	273.8 million	77.76%
5	Brazil	South America	181.8 million	214.3 million	84.83%
6	Russia	Europe/Asia	127.6 million	143.4 million	88.98%
7	Nigeria	Africa	122.5 million	213.4 million	57.41%
8	Japan	Asia	102.5 million	125.7 million	81.54%
9	Mexico	North America	100.6 million	126.7 million	79.4%
10	Pakistan	Asia	87.35 million	231.4 million	37.75%"

Source: https://www.statista.com/statistics/262966/number-of-internet-users-in-selected-countries/

Regional Statistics on Internet Adoption:

Approximately one in four (24%) internet users are from East Asia. With a 74.3% internet penetration rate, this densely populated area outperforms the global average of 64.4% by nearly 10%. Here is a complete list of internet users worldwide along with adoption rates by region:

Table-2: Internet users worldwide along with adoption rates by region (as of April 2024)

"Region	Share of Global Internet Users	Internet Penetration Rate
East Asia	24%	74.3%
South Asia	18.5%	47.4%
South-East Asia	10%	75.6%
South America	6.8%	80.6%
North America	6.7%	92%
Eastern Europe	4.9%	86.9%
West Asia	4.3%	75.3%
West Africa	4%	48%
Western Europe	3.5%	93.5%
North Africa	3.3%	65.9%
Southern Europe	2.6%	88.4%
Central America	2.6%	74.9%
East Africa	2.1%	23.1%
Northern Europe	2%	97.4%
Central Africa	1.1%	27.9%
Central Asia	1.1%	72.5%
South Africa	0.9%	70.6%
Oceania	0.7%	79.4%
Caribbean	0.6%	68.4%

World	100%	64.4%"

Source: https://www.statista.com/statistics/269329/penetration-rate-of-the-internet-by-region/

India is home to the greatest number of disconnected people among all the nations. Approximately 680 million Indians, or 47.6% of the population, do not utilize the internet.

Table-3: Unconnected people do not use internet world wise (As of April 2024)

"Rank	Nation	Region	Unconnected Population	% of Offline Population
1	India	Asia	683,707,000	47.6%
2	China	Asia	336,419,000	23.6%
3	Pakistan	Asia	131,801,000	54.3%
4	Nigeria	Africa	123,428,000	54.5%
5	Ethiopia	Africa	103,290,000	80.6%
6	Bangladesh	Asia	96,473,000	55.5%
7	Indonesia	Asia	93,401,000	33.5%
8	DR Congo	Africa	75,612,000	72.8%
9	Tanzania	Africa	46,600,000	68.1%
10	Uganda	Africa	35,946,000	73%"

Source:https://www.statista.com/statistics/1378504/people-do-not-use-internet-by-region/#:~:text=As%20of%20April%202024%2C%20almost,as%20of%20the%20examined%20month.

There won't be a shift at the top anytime soon because the margin between China and second-placed India in terms of internet users is more than any other country's whole population.
As a result, even though the number of internet users around the world keeps rising, Asia will remain the continent with the most users.
Developing nations are starting to see the effects of the digital divide (Devraj, 2000). Even at the same or reduced cost, digital divide persists due to low purchasing power. There is also the matter of the internet's dismal growth rate of adoption and its slow penetration rate.
When trying to pin down the root causes of poor internet penetration, four clear and interdependent factors stand out: price, infrastructure, breadth and depth, and societal difficulties.

2. Quad-framework for service availability assessment

2.1. Social Concerns

In underdeveloped nations, internet usage is pitiful. Men still make up the vast majority of users, both present and future, even in the industrialized globe.[3] Getting online in many LDCs and developing nations takes a lot of time and effort, as does traveling to the closest community center or cyber café. As a result, getting a male to commit is difficult, much alone a female. Further undermining the goal of social inclusion are the exorbitant fixed and operational costs that exclude lower-class society members. In many circumstances, the absence of locally relevant content makes online learning a sluggish process. The user also feels less assured due to the abundance of possibilities offered by computers and the internet. Fear of computers stems from the widespread belief that they are extremely complex devices, which persists in many communities despite widespread access to computers.

2.2. Infrastructure

With the exception of a small number of locations in the majority of industrialized nations, very little of the world has access to reliable wireless internet. Therefore, connectivity is required in order to access the internet. The lack of ubiquitous wired internet connectivity is a problem in many developing nations. Wireless infrastructure is expensive and often just at the capability demonstration phase, even when mobile/telephone connections are relatively higher. One of the main reasons for the slow expansion of the internet is its global interconnectedness, which is both a benefit and a drawback of the medium. It is not economically viable for the majority of private sector actors to lay cables in rural areas where there will be very little demand in the near future. Establishing an internet connection might be challenging in areas without adequate fixed telephone

connections.[4] On a personal level, the cost of computers hasn't dropped nearly enough to warrant this kind of expenditure. In the majority of underdeveloped nations, spending $1,000 on an individual or small group is simply not feasible. A small number of companies made headway in this space by offering $200 desktops in India, but their attempts failed because to the high demand necessary to maintain the tiny wafer margin.

2.3. Cost

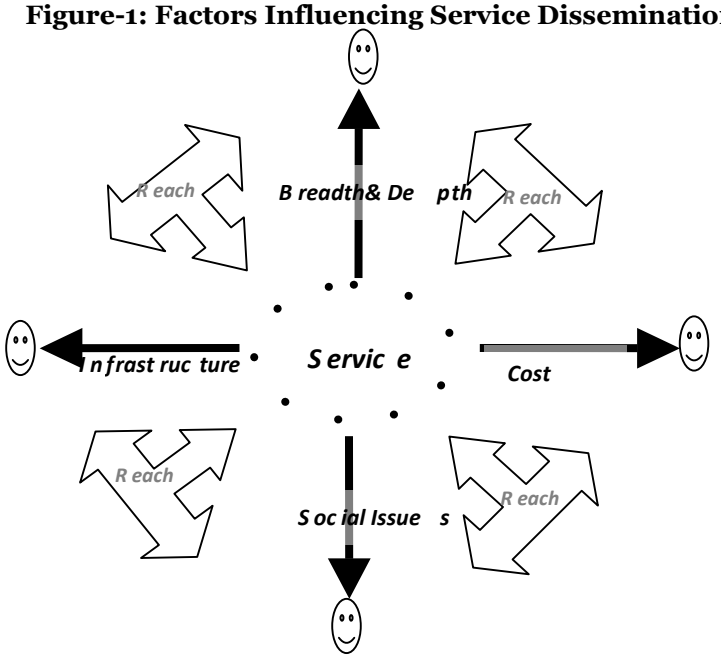
Despite the existence of the necessary infrastructure, the prohibitive running costs have kept the internet out of reach for those at the base of the pyramid. Even in somewhat developed regions, no one uses the internet because of slow speeds, unpredictable connection drops, and a pitiful power supply. The economic expenses of adequate internet use are exorbitant when these factors are considered.

2.4. Breadth and Depth

The domino effect is undeniable, even though it appears to be a by-product of the aforementioned variables. By "breadth," we mean the ability to reach and interact with people across a large portion of a country, and by "depth," we mean the ability to reach people at the local level and across different social strata. In every nation, you'll find pockets of relative economic and social prosperity. Moreover, in the majority of developing nations, a small number of locations provide a disproportionately high quality of service. The last word is "the accessibility remains inadequate," even though there could be hundreds of causes (such as economies of scale). Like other widespread services, the internet initially attracted only the most privileged members of society, such as those with a penchant for technology, those working in academia or the business world, and those with substantial disposable cash. However, as the service's prices dropped, more and more people were able to afford it. Therefore, the internet became more acceptable to people from all walks of life as a result of its widespread use.

To have a better understanding of the model, we will talk about the parameters for service dispersion in the context of developing nations, namely in rural areas. Table 3 provides a concise summary of this comparison. There are four factors to consider: infrastructure, service depth and breadth, cost, and social issues. There are more people with mobile phones than there are people with internet access. Greater connectivity is desirable for a number of reasons. First, keeping in touch has become much more important. The penetration has risen due to a physiological shift regarding connectedness. The declining cost of calls and mobile connections has made this previously ignored fact more convenient to notice in recent years. Positive network externalities, sometimes known as the "bandwagon effect," have also increased the demand for connections. More mobile operators are penetrating the market to make money because the cost of infrastructure has dropped significantly recently. The very minimum for a computer is still in the thousands of dollars, even though there have been tremendous advancements in the field. Additionally, developing nations lack the necessary infrastructure, such as reliable power sources and easy access to computers, to enable internet connectivity. Everything is even worse now because of the slow narrowband speed. While mastering a computer takes a lot of work, picking up the fundamentals of a mobile device is much easier because of its smaller features. Table 3 has captured all aspects and is available for review in this debate.

Figure-1: Factors Influencing Service Dissemination



Source: Ganpat, W. G., Ramjattan, J., & Strong, R. (2016).[5]

Table-4: Comparison of Mobile and Internet-Based Connectivity's Service Dissemination Parameters

"Service Parameter	Internet Based Connectivity	Mobile Based Connectivity
Infrastructure	Low	Medium to Good
Breadth and Depth	Very Low	High
Cost	High	Relatively Low
Social Issues	Computer literacy and acceptance	Mobile is a household gadget."

Source: Kushwah, R., Tapaswi, S., & Kumar, A. (2019).[6]

It's noteworthy to notice that while mobile (not fixed telephone line) penetration is less than 1% in only 8 nations (for which data could be compiled), internet penetration was not even 0.5 in several of them. A clear and noticeable change exists. The effect is noticeable in developed nations as well, although because of the developed world's earlier maturity in mobile and internet usage, the multiplicity is not as great.

3. Advantage Mobile[7-11]

We will evaluate and contrast the benefits of mobile services using the same service availability quadra framework.

3.1 Social Issues

Social issues still exist, but they no longer have as much of an impact on mobile phones. If internet access is accessible at all, it usually requires certain hours for surfing, and in many developing nations, this means making significant travel. For this author, getting internet in their ancestral home requires a mere 17-kilometer journey. Internet access is therefore a major desire for men, let alone women. Mobile devices have a distinct case. First of all, travel of any kind is not necessary. Given the robust growth rates, chances are that if a mobile phone is unavailable at home, it will likely be available in nearby homes. Secondly, it doesn't need hours of dedicated time. Any time during the day, even a few minutes will suffice. Thirdly, because of increased exposure, learning how to use a mobile phone is quicker than learning how to use the internet. Fourthly, although the internet and computers allow for the ability to create a wide range of content, they also pose a hazard to new users who may become overwhelmed by the process. To put it simply, a novice user, especially one who is illiterate or badly read, finds themselves confused and fumbling due to the abundance of keys, clicks, and meanings. The user finds considerable relief in the simplicity of mobile devices, which just require standard selection models and a small number of buttons to operate. The user finds mobile to be more soothing due to its lower cost and constant exposure.

3.2 Infrastructure

In contrast to the internet, mobile devices don't need accessories to function. Tower sharing and the expansion of tower reach and power are considering all geographical areas; as a result, costs have drastically decreased, incentivizing operators to install more towers and serve more clients. Relatively little power is needed. It is a crucial component in emerging nations. Another distinctive feature of mobile services is their lower marginal cost of user acquisition within a specific zone.

3.3 Cost

The price of mobile phones has increased to between USD 20 and USD 25 due to new technologies (in India). Furthermore, it might not be the final pricing point. With the development of new technologies and more pressure from mobile makers and operators, it might fall even further. The user is the ultimate beneficiary, regardless of the cause. Nonetheless, a mobile device's operating costs are either the same as or more than those of a PC. However, the advantages of connectivity and the ability to make calls outweigh the little increased cost in a very competitive manner. The cost per connection is declining as new technology enters the market. Lower service costs are the result of users receiving this advantage concurrently. Over the past few years, the average revenue per user, or ARPU, has significantly declined.

3.4 Depth and Breadth

The breadth & depth of mobile services surpass those of PCs and the internet as a result of the combined influence of the preceding three factors. People from all income levels are able to use the service because call costs are declining and rents are becoming more affordable. There are emerging new competitors in the market. Covering up a geographical area has multiplied. Numerous participants exist even within a specific geographic area. The lower classes of society are becoming more and more reliant on mobile devices. The geographical sectors that current players cover are all conceivable (Breadth of service), and the arrival of new players increases the number of connections within a region (Depth).With the introduction of more affordable smartphones and aggressive combination offers from mobile carriers and manufacturers, the initial fixed cost of purchasing a mobile is decreasing.

4. SPOKE AND HUB MODEL PROPOSED

The name of the model makes it clear that it is necessary to look for the right spoke and determine whether it is suitable for the application in question. It is also necessary to clarify the concept of hubs in the appropriate context with regard to their functioning and domain. We break down our model into two sub-models based on the conventional hub and spoke features in order to fully characterize the spoke and hub model. Delineating the spoke and hub in relation to the e-governance services process will work well for demarcating the boundaries. It would be appropriate to talk about two quite different types of e-governance service processes. They are known as "the Information Creation/Update Model (ICUM) and the Information Dissemination Model (IDM)." Our model's hub is the ICUM, and its spokes are the IDM and IDM. This model attempts to represent implementation challenges at the rural or semi-urban level.

4.1. Information Disseminating Model (IDM)[12-14]

Contrary to conventional wisdom, this strategy does not intend to employ information and communication technologies (ICT) or convergent media to disseminate previously-released, publicly-beneficial government information. "Digital Governance" website. Depending on the source, the data might not originate from the public domain. The focus of this article is on the Information Dissemination model, which is primarily concerned with disseminating data to the general public. What makes this model different from others is the way data is structured. While details regarding public programs could end up in the broadcasting model, details regarding an individual's property would be considered private. Those with a stake in the process and the plot owner's approval should be allowed to access it. For instance, emerging nations may have a variety of factors that necessitate the production of land records. Although land record registration is infrequent, the necessity to reproduce the record is more common. This criterion solely pertains to the retrieval of information that is contingent upon the verification of the identification of the individual making the request. Similar to how the read-only or non-transactional services are typically launched initially in mobile banking, this concept can be implemented here with a twist.

A possible road map to the creation of the IDM looks somewhat like this.

- Launch of electronic government service
- Finding data that might work well on a mobile platform
- Determination of legitimacy
- Establishing a mechanism for triggers and a process for their consequences
- Working together with cellular carriers
- A self-service awareness campaign and training
- enhancing the procedure for disseminating data

Separation of the e-governance service's two primary components, ICUM and IDM, is an essential design requirement. Because the mechanism is often designed as a fixed module to a certain site, scalability becomes an urgent issue. In a federal system, individual states often pursue autonomy by developing their own healthcare systems, land records systems, etc. Scalability issues and a lack of standards are the results. Therefore, the segregation model requires a standardized format. Concurrently, it has to be careful not to become overly generic and hurt efficiency and cost-effectiveness. Further customization of the service in accordance with pertinent personal facts is also required. For instance, while the majority of the population in some regions may have a common form of identification, such as a voter ID card or other government-issued document, in others, there may be a small number of areas where this is not the case. Accordingly, tailored deployment according to specific location necessitates the e-governance service's inherent flexibility.

Finding content that works well on mobile platforms is an important first step. While some pieces of information may be universally applicable, others may be more sensitive and hence inappropriate for this platform to disseminate in certain social contexts. Because of this, this stage is very subjective and will rely substantially on the judgment of the individuals implementing the system on the ground. It is possible to give equal weight to monetary and social concerns for the same.

Establishing authenticity identification is critical for unique matching of information with the proper owner, as we have covered in earlier sections, throughout the creation of e-governance services. Correct mapping is thus necessary. Additional factors that can affect the service's evolution include the accessibility of appropriate identity data on a regional level. People in different parts of the world or in different situations could interpret the same piece of information in different ways. Therefore, these must be addressed locally. The authenticity identification procedure and the inputs it uses can determine the content of information, which can be problematic because some of that information is sensitive.

Verification of validity is the first step in retrieving and disseminating the data in the correct format, whether that's through the mobile app, regular mail, or some other means that may be necessary in the event of unforeseen circumstances. The key here is to designate responsibilities and set up a system of automatic notifications for the individual in question. You can also report any violations of information dissemination deadlines and have them escalated in the administrative hierarchy for better accountability. Building confidence in the service requires this action. Due to the novelty of the idea, government workers may not take mobile transactions seriously, which could undermine the service's reputation and reliability. This means it can be stopped before it even starts.

Collaborating with a mobile service provider may seem like a no-brainer, but it's actually rather important. The mobile operators are mostly responsible for the procedure, which means that their credibility and reliability are also dependent on them. It is crucial to think about two things here: first, how to get citizens' requests sent to the platform that captures them, and second, how to charge citizens for the service through cell operators. A citizen can submit a request to a mobile operator, and the operator can then transmit it to an e-governance service platform; all of this requires the right software. In order to create software with the right user interface and all the necessary features (like a dedicated number for e-governance services or a standard format for navigation that works with different mobiles and mobile operators), developers must work together, even at the local level. The next step is to establish a communication standard for the conveyance of requests from mobile operators to e-governance services. In addition to this, the billing is a crucial component. One possible solution is enabling citizens to pay for the service through their mobile operator subscription or other fees; this would eliminate the need for a separate cash or money transfer channel, which could make matters worse. It is necessary to establish the terms and processes for income sharing in relation to this.

The last step to increase the service's acceptance is to conduct an awareness drive and provide training for self-service. This is consistent with widespread belief that a transaction lacks the necessary credibility in the absence of a formal paper-based receipt. The service's push component is the awareness campaign. A larger audience's familiarity with the service may be necessary to increase its acceptability. The most important thing is to get a certain number of users, because that will allow for economies of scale and the formation of self-learning groups that can fix themselves when one of its members messes up. Community opinion leaders or relative innovators might make a good focus group for training purposes. Keeping this in mind, it is necessary to design a training module and a locally focused, highly interactive campaign. Given the impossibility of training everyone and the high rate of error in the beginning, it is wise to reward those who demonstrate the necessary zeal and who derive personal satisfaction from passing on their knowledge: innovators and opinion leaders.

Improving the circulation of information is necessary to ensure its continued usefulness. For instance, it would be completely pointless to provide land records on a mobile phone because of how practical they are, but it may be highly useful to track license applications on a cell phone. Prior to finalizing the way of information distribution, it may be necessary to build a clearer understanding with the channel partner, such as the post office, regarding the provision of the record or information.

4.2 The Model for Information Creation and Update (ICUM)[15]

Having an internet connection and specialized terminals at these e-governance service centers is an essential component of this strategy. The system's comparatively greater fixed cost necessitates this paradigm. Training, language barriers, power requirements, and maintaining a pleasant atmosphere for the system can all drive up running costs. Furthermore, many developing nations lack the last mile link necessary to access the internet. The goal is to minimize this model to the utmost by removing any significant cost components. Nevertheless, a great deal of preparation is necessary for this stage. Considering the ICU's role in the e-governance plan, it's important to thoroughly examine how well it aligns with the aims of the larger plan. This architecture, sometimes known as the Information Dissemination architecture (IDM), is essential at the lower levels but has fewer instances than the spoke model because of its constraints. The following sections cover the main points that should be considered for ICUM.

- Harmony with the goal of national e-governance
- The capacity to work with other services in a variety of ways
- A hub where channel partners may work together to stay in sync
- Being sensitive to wishes and requirements on a local level
- Reduced or eliminated lower-level physical contact

Although the service can begin at an experimental level in a limited geographic area or with other relevant constraints, the end goal should be to match with the national e-governance target. Few opportunities exist for the organized flow of national objectives due to the presence of numerous services that are objectively incompatible and operate in separate domains and regions. Dispersion of services in several directions has occurred due to initial ad hoc efforts, consequential popularity of the service, the presence of individual champions at the local level (instead of national ones), and the absence of guidelines at the central level. This has fought against the holistic objective of national e-government.

There is room for future addition, improvement, and synchronization with both current and future services thanks to the malleability of peer-service interoperability. All systems are heading in different directions due to the lack of a national standard and pattern, which makes the idea of a national e-governance plan useless. The goal of universal consolidation of a country's e-governance services becomes meaningless due to service isolation, recurrent attempts for comparable aims, and the costs (direct and indirect) involved for practically all players. The transparency in defining a service's goals while keeping an open mind about a mutually exhaustive and collaborative framework with other services would increase the service's acceptability and speed up its implementation.

The success of e-governance in providing citizens with services is heavily dependent on the other service channel partners. Government postal services, for instance, may act as a channel partner in certain instances. An amicable and harmonious relationship building at ground level is essential, as is acceptance of the system in its format, because other partners may be required to take action on requests in certain cases. For example,

if you are inquiring about the status of a passport, it will be necessary to generate a trigger to seek status reports from different departments, such as the Home Office, the Police, and other local authorities. The ideal scenario would be if all stakeholders wholeheartedly adopt the new system; but, in most cases, we have seen natural resistances. This means that e-governance and the system in particular need a collaborative platform that aims for amicable and productive relationships.

To better grasp the requirements of the system, it is vital to appreciate the local needs and aspirations. System adaptation to meet lower-level needs is also critical to the system's acceptability. The proliferation of competing e-governance platforms that all aim to accomplish the same thing in their own unique ways is proof of this. It is reasonable to assume that taking into account and integrating local needs is more than just tweaking the software's user interface; rather, it is a process shift toward greater inclusivity involving stakeholders and residents alike. Accordingly, the story of the system's evolution should convey the idea of harmony with regional priorities and ideals. There will be far less resistance to the service's adoption if prominent members of the community, including seniors, are involved in its early stages. An important component determining the outcomes of various programs across all domains and levels is communication, not alienation.

While there is more than one paradigm to which one must adhere, e-governance likewise seeks efficiency. Even so, many have held the view that efficiency is the only determinant. Some have even suggested doing away with physical contact altogether as a way to cut costs. This document aims to eliminate any difficulty to the citizen, however it is still possible that this is the case. Just so you know, it's clear that our model suggests fewer ICUM due to cost consideration and greater quality attainment. There is an emphasis on less physical contact since, in the setting of the developing world, especially rural areas, the distance becomes too great to encourage people to use the service. Simultaneously, the removal of the burden of repeated trips leads to quicker acceptance due to the convenience of usage.

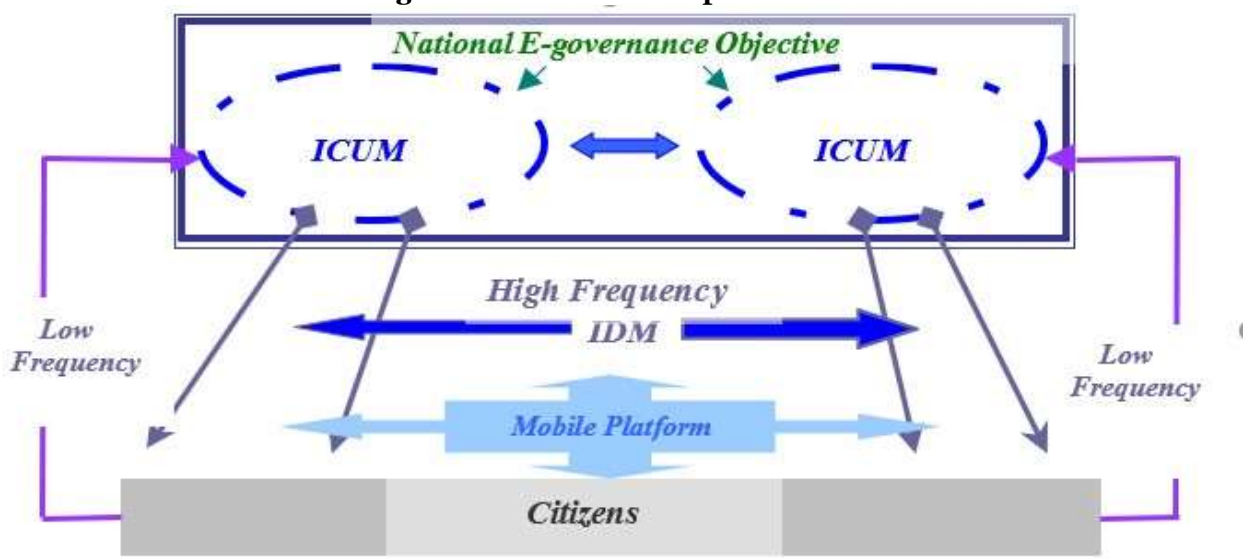
4.3. Combining the Two Models:

There is a synergy between ICUM and IDM. For IDM to function, ICUM must first exist, since IDM is responsible for a large portion of ICUM. Since the ICUM and IDM were both developed within the joint framework, integrating the two models is an easy next step. The goals of the national e-governance initiative informed the establishment of the ICUM. The ability to integrate and work in tandem with other electronic government services is one of the ancillary factors to think about. Since ICUM's data production and update are not particularly regular, the user engagement should be relatively low. Users (citizens) receive ICUM's output—whether it's a read request or some other kind of information request—through the mobile platform that mobile service operators already supply. Due to greater acceptance and higher anticipated usage, this model will have a longer period in the public eye, even though it may have a longer time to public.

4.4. Extending IDM

It is highly feasible to extend IDM to additional services. While our approach focused solely on citizen data, IDM has the potential to expand to include any type of publicly available information. Due to the data's static nature and its generation by government entities, it is unclear whether this information requires its own ICUM. For instance, there are many examples, such as the delivery of rations at the local public distribution system, weather forecasts, prohibitive storm warnings, and so on.

Figure-2: The Hub and Spoke Model



Source: Liu, S., Kasturiratne, D., & Moizer, J. (2012).[16]

5. Other Stakeholders' Roles

There needs to be involvement from other parties due to the high degree of computer literacy and the widespread belief that paper is better than electronic information. E-governance services must prove their worth. Therefore, the private sector and NGOs (Non-Government Organizations) play an essential role in keeping the model alive.

5.1 The Function of NGOs

There is a strong bond between most NGOs and the communities they serve. After a while, they start to act more like an advisor and a voice for the local population. Considering the great degree of confidence we have with them, NGO should be involved in the entire plan we outlined before. Accepting the genuine and reasonable demands of NGOs at the local level is a sure-fire way to win their support. Consequently, resolving the population issue and improving the public's perception of NGOs will aid in their recruitment to board positions. More individuals will be able to use and accept e-governance services if their capabilities are better communicated and more people are aware of their availability.

5.2. The Private Sector's Role

The private sector has a significant role. For the Indian market, market leader ITC has set up e-chaupal, which is a meeting spot for influential locals in Hindi. The idea of e-chaupal was to give farmers access to up-to-the-minute data on things like pesticide, fertilizer, and crop pricing. Because it cut out the intermediaries, both ITC and farmers benefited. Now it can offer a plethora of additional services thanks to its expansion. In a public-private partnership concept, the private sector could be involved through a revenue sharing arrangement. This would help the government save money while also benefiting the people and the private sector through e-governance on a local level.

6. Other aspects of the model

The focus of e-governance services is on interacting with customers. Careful management of the process is required due to the high level of grassroots involvement. Factors such as socioeconomic status, race/ethnicity, and geography can cause the target audience to differ. Problems with cultural and human resource compatibility arise from all of these factors. Here we have covered some of the other factors, including human capital, social capital, and cultural capital.

6.1 Capacity for Human Resources

There has to be a recognizable and reassuring face for the lowest level of service to be more accepted. In this matter, sourcing human resources at a lower level will prove useful. Equally important, though, is ensuring a high-quality human resource pool. It is possible that there is a lack of qualified applicants in certain regions of the world. Think about how the decision will affect the community and how well it will mesh with the demographic you're trying to reach.

6.2. Training

Both operators and users need to undergo training. Training for operators may be rigorous because of the pressure to complete tasks quickly, whereas training for users may be less so. A methodical approach is necessary. Having a straightforward Graphical User Interface (GUI) is also an important design consideration.

6.3 Getting Along With Other Cultures

Because this wasn't even considered, many e-governance services ended up failing. There is a problem with cultural compatibility. For instance, requesting the removal of the Prada system for identification purposes may be problematic in nations where it is widely used. Therefore, both the training and operation modes need to give careful consideration to these sensitive concerns while interacting with the society.

7. The Model's Limitations

The m-governance model may be unable to venture into the uncharted and intricate realm of e-governance owing to the inherent security risks associated with mobile devices and other related concerns. There are some technological concerns, such as a smaller screen, higher communication costs (compared to the internet), and problems with data entry. However, these issues can be greatly reduced, if not eliminated entirely, with the development of strong software and an intuitive GUI. While the general public's greater technological maturity in recent years may cause a mild recurrence of the hesitancy and resistance that accompanied the shift from paper to digital records, this might be cause for grave concern in extremely technologically backward areas. A higher level of discussion is required for the execution of sensitive transaction-related processes. It may take a lot of convincing and inspiring early adopters to get everyone on board.

8. Conclusion

If less internet access is prevalent in developing nations and LDCs, it could hinder the spread of e-governance services that rely on it. Although some countries do have internet access, the connections are unreliable, the speed is pitiful, and the fixed and operational costs are still quite costly. Therefore, connectivity problems may compromise the efficacy and influence of e-governance services. So, a supplementary model that can back up extensive e-governance services is necessary. With more and more people using mobile devices, it's clear that mobile-delivered governance services are becoming an option. The article introduces two novel service delivery models, ICUM and IDM, which are both straightforward and easy to understand. This takes care of the problems with implementation and broader reach. But spectrum congestion and the slow rollout of new services (5G, Wi-Max) might make things worse down the road. Although m-governance is not yet mature enough to fully replace e-governance, it is perfect for testing the waters in uncharted, disconnected regions.

9. References

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